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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,200	10/21/2003	Salman Akram	4244.5US (97-1355.05/US)	3680
24247	7590	05/16/2007		
TRASK BRITT			EXAMINER	
P.O. BOX 2550			DOLAN, JENNIFER M	
SALT LAKE CITY, UT 84110				
			ART UNIT	PAPER NUMBER
			2813	
			MAIL DATE	DELIVERY MODE
			05/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/690,200	Applicant(s) AKRAM ET AL.	
	Examiner Jennifer M. Dolan	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 25 April 2007 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 6-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Lines 3-7 of claim 6 imply that all of the polysilicon layer, the metal silicide layer, and the dielectric layer are considered to be included as part of the dielectric structure. The claim further creates confusion by including a step of forming a gate structure and additionally forming the polysilicon layer, the metal silicide layer, and the dielectric cap layer, without specifying that the polysilicon layer, the metal silicide layer, and the dielectric cap are part of the gate structure. This phrasing indicates that the gate structure is separate from the components belonging to the structure, or that such elements are "double included" in the claim. The claim even further

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creates confusion by claiming a sidewall, without specifying what layers form the sidewall or how such a layer is disposed.

The Examiner highly recommends replacing the material in lines 3-7 starting with “forming a gate structure” and ending with “a first sidewall and a second sidewall” with the following:

--forming the dielectric layer, the dielectric layer including a gate oxide layer;
forming a gate structure overlying the dielectric layer, the gate structure including a polysilicon layer formed on the gate oxide layer, a metal silicide layer formed on the polysilicon layer, and a dielectric cap formed on the metal silicide layer, the gate structure having a first sidewall and a second sidewall—

4. The following is a quotation of the fourth paragraph of 35 U.S.C. 112:

Subject to the following paragraph, a claim in dependent form shall contain a reference to a claim previously set forth and then specify a further limitation of the subject matter claimed. A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers

5. Claim 10 is rejected under 35 U.S.C. 112, fourth paragraph, as being indefinite for failing to further limit a claim previously set forth.

Claim 6, upon which claim 10 depends, specifies that the first single thin layer sidewall spacer is formed of an oxide dielectric material. Claim 10 improperly broadens the scope of claim 6, rather than further limiting claim 6, by specifying that the first single thin layer sidewall

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spacer may be formed of silicon nitride or silicon dioxide material, noting that the silicon nitride material is not an oxide dielectric material, as required by claim 6.

Allowable Subject Matter

6. Claims 6-9 would be allowable if rewritten or amended in the manner suggested by the Examiner, supra, or in another acceptable manner to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

7. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for allowability is the combination of forming a conformal sidewall spacer from an oxide dielectric material, and forming a second sidewall spacer made of the same oxide dielectric material over the conformal layer, wherein plural source/drain implants are performed, with one implant aligned to the gate structure sidewalls, one implant aligned to the full thickness of the conformal and second sidewall spacers, and one implant aligned to the second sidewall spacer after partially removing the second sidewall spacer, in addition to the other limitations in the claims.

The closest prior art of record is U.S. Patent No. 5,866,460 to Akram et al., which teaches many elements of the claimed method, but lacks a conformal sidewall spacer underlying the main sidewall spacer. Although the use of plural sidewall spacers including an innermost conformal layer is known in the art (see U.S. Patent No. 5,739,066 to Pan, for example), the prior art does not teach the combination of using an oxide conformal sidewall layer with an oxide

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overlying sidewall layer when etching is to be performed on the overlying sidewall layer. The prior art, instead, either strongly urges the use of a nitride or non-oxide conformal layer by using it as an oxidation barrier, or when etching of overlying sidewall layers is to be performed, the prior art suggests using different materials for the adjacent sidewalls, such that each layer acts as an etch stop for the previous layer. Since the prior art fails to provide any motivation for the use of an oxide conformal sidewall layer with an oxide layer disposed thereon in combination with the sidewall spacer etching steps and sidewall aligned implanting steps appearing in claim 6, it is the Examiner's opinion that the claimed invention would not have been obvious to a person having ordinary skill in the art.

Response to Arguments

8. Applicant's arguments with respect to claims 6-10 have been considered but are moot in view of the new grounds of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

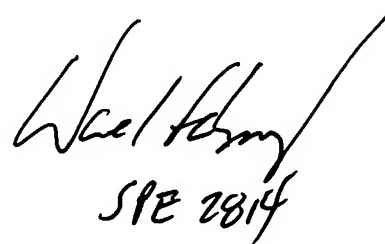
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer M. Dolan
Examiner
Art Unit 2813

jmd



Wei Hong
SPE 2814